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through the point of the hair when it comes in contact with the skin. There is a poison gland for each papilla on a tubercle but not one for each hair.

Behavior of Insects and Spiders.—Turner ('14, Journ. Animal Behavior, 4: 394-413) gives a summary of "The Literature for 1913 on the Behavior of Spiders and Insects other than Ants." The essential results of each paper are briefly discussed. At the end of the paper the literature for the year 1913, consisting of one hundred and twenty-six titles, is listed.

Catocala Moths.—Turner and Schwarz (Biological Bulletin, **27**: 275-293) presents a paper on the "Auditory Powers of the Catocala Moths." An experimental field study on several species of the genus *Catocala* has shown that several of the species observed respond definitely to certain high pitched notes of the Galton whistle but usually fail to respond to sounds of low pitch. Degree of responsiveness differs in different species. Lack of response to sounds of low pitch is not attributed to failure to hear such sounds, but it is the opinion of the authors that these moths respond "only to such sounds as have a life significance."

Olfactory Sense of Insects.—McIndoo ('14, Smithsonian Misc. Coll., 63: No. 9) presents evidence against the old view that the olfactory sense of insects is located in the antennæ and finds that in *Hymenoptera* the organs of olfaction have their seat in certain definite regions, such as the bases of the wings, the bases of the legs, the sting of the worker and queen honey bee, and the mouth parts, where aggregations of "olfactory pores" occur. Evidence is also presented in favor of the view that possibly these olfactory pores are the true olfactory organs in all insects. No evidence is found of any organs of olfaction on the antennæ.

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NOTES ON MICROSCOPIC TECHNIQUE.

Euparal.—Euparal is a mounting medium composed of a mixture of camsal, sandarac, eucalpytol and paraldehyde, having a refractive index of 1.483. It is put up in two forms, the colorless and the green, the latter containing a copper salt which intensifies hæmatoxylin stains. The colorless is preferable when stains other than hæmatoxylin are used. Either may be obtained from G. Grübler & Co., Leipzig.

The primary advantage of this medium is that it spares delicate objects the usual treatment with absolute alcohol, since objects may be mounted in it directly from 95% alcohol. It dries rapidly so that preparations may be studied with safety at the end of 24 hours. These two points should be of interest not only to investigators, but to those who conduct classes in embryology in which students prepare their own serial sections for study. Further, cover-slips may be readily removed from old preparations by immersion in 95% alcohol for several hours.

Another useful property of euparal is its low index of refraction which is well adapted to cytological study, giving a much desired increase of visibility to delicate elements. It may also be noted that it does not bleach the stain.

During the past year I have used euparal with a variety of material and have found it uniformly satisfactory. It is superior to Canada balsam in every way.

Safranin O and Lichtgrün.—This is a staining combination especially well adapted for the study of chromosomes, and is one that should be more widely used than is the case at the present time. In many ways it is superior to Iron-Alum-Hæmatoxylin, although it may be used to good advantage in conjunction with the latter.

The Safranin should be of good quality preferably Grübler's Safranin O. The usual solvent is anilin water which may be made by shaking up 4 or 5 cc. of either anilin oil, or old discolored anilin, in 90 cc. of distilled water and filtering. Enough 95% alcohol is added to the filtrate to make a 10% alcoholic solution, in which 1 gram of safranin is then dissolved.

Lichtgrün (Grübler's Lichtgrün L. S.), the acid counterstain, is made up by adding .5 gram of the stain to 100 cc. of 95% alcohol.

The staining procedure is as follows: Sections on the slide are stained in safranin for from 4 to 6 hours. Excess of the stain is removed by washing in 35% alcohol for a few minutes. The sections are then rapidly passed up through the graded alcohols to 95% from which they are transferred to Lichtgrün in which differentiation is done. The secret of good preparations is to let the lichtgrün act just long enough to extract the excess of safranin. A little practice will enable one to tell from the general appearance of the slide held up to the light when to stop. Usually for thin sections 30 seconds is enough. It is well to move the slide about all the time it is in the lichtgrün.

The excess of lichtgrün is hastily washed off in 95% alcohol after which the slide is immersed for a second in absolute alcohol and then transferred to clove oil for one or two minutes. Before mounting the excess of clove oil may be removed by immersion in xylol. Euparal may be used as the mounting medium after xylol.

Safranin stains chromosomes and chromatin elements a deep red for which the light green background gives an excellent contrast. Many object to lichtgrün because it is not permanent. However, I have had preparations retain their brilliancy for two years or more and that certainly is long enough for most lines of work.

Hæmatoxylin-Orange G Stain for Embryos.—To those interested in a satisfactory double stain for vertebrate embryos, attention is called to the method published by J. T. Morris in the Anatomical Record, Vol. 3, 1909, under the title "A Note on Orange G counterstaining suggesting a useful method in the handling of embryonic tissue." I have found the method extremely satisfactory in staining serial sections of human embryos. It was surprising to find that it stained chromosomes in dividing cells with all the clear-cut detail of iron-alumhæmatoxylin.

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METHOD OF PREPARING FLY'S TONGUE AS MICROSCOPIC OBJECT.*

A fly's tongue when properly prepared and mounted makes a very beautiful object for the microscope, but to the novice it has been more or less a difficult task. With the following suggestions the worst part of the preparation is overcome with much ease, that is, making the lobes of the tongue lie flat and evenly spread out.

We have all noticed that when the fly places his tongue on a flat surface it spreads out the lobes in a way we would best

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* Presented before State Micr. Soc. of Ill., Feb. 11, 1915.